

ENGINEERING & DESIGN CONSULTING SERVICES

We specialize in making your vision a reality! Our experts have over 25 years of experience in long-range atmospheric propagations of lasers for LiDAR, Laser Imaging, SSA and Laser Communication, we understand the challenges. Our unique approach to optical turbulence mitigation and laser safety, means lower risk and better performance for your designs.

Let us help you with the following:

- Link Budgets for Turbulence Mitigation
- Optical System Design
- Calibration & Alignment
- Laser Safety Analysis
- Dynamical Modeling of Complete Systems



OPTICAL TURBULENCE MITIGATION

Turbulence is a major concern because of its effects on optical systems. We can help you understand how it affects system design, such as:



Aperture requirements



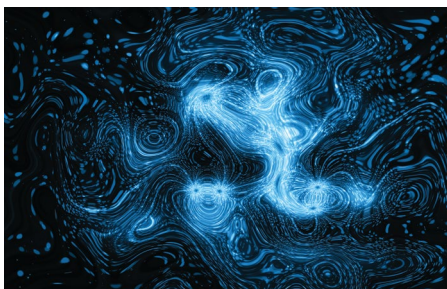
Transmitter configuration



Receiver sensitivity



Adaptive Optics (AO)



We can calculate how effects such as beam wander and scintillation impact the Quality of Service (QoS) of your systems accurately determining the effects of turbulence on link budgets; for daytime operations is important so you don't needlessly over-engineer your systems.

SYSTEM DESIGN

We not only design systems, we build and use them. This means that our designs are built with operational efficiency in mind. Whether you are building an experimental system for a university, or commercial system for 24/7/365 operation, our experience means your systems will be more operationally robust and maintainable. We design systems that are positioned on stationary, transportable, or moving platforms. Additionally, we can test and characterize your systems once complete, so you can be assured they are optimized.

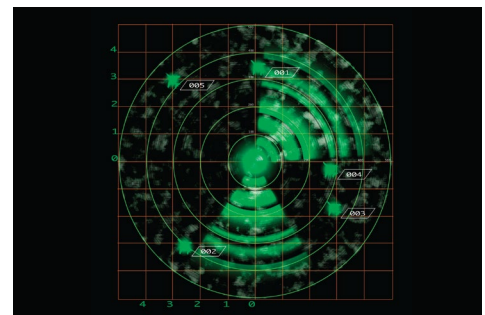


CALIBRATION & ALIGNMENT

Designing a system is not simply calculating link budgets, signal to noise ratios (SNR) and calculating bit error rates. Some of the more challenging problems are how to optimize the acquisition, tracking, and pointing (ATP) of your system. Whether your system tracks Low Earth Orbit (LEO) Satellites or aircraft, it is critical that the system be designed so that metric calibrations and optical alignments can be maintained over time. We can help you develop procedures and implement design elements that ensure optimal system performance.

LASER SAFETY ANALYSIS

We help clients develop a detailed Laser Safety Plan in advance of any investment in the overall design of the OGS or operational environment. Or, we can run an analysis on an existing system to outfit it for upgrade. Our analyses encompass everything from planning to operations; CONOPS; software; hardware; record keeping; validation; certification; procedures; etc. We will work closely with you throughout the process to tailor the analysis to your needs and audience. We can design custom systems to automate the laser safety process or we can help you integrate our proven XOS laser safety software into your new or existing systems.



OPTO-MECHANICAL DESIGN

Not only do we build and sell optical and photonic products, we also design custom systems. We are experts at integrating Commercial Off the Shelf (COTS) elements into custom design. This approach saves money, reduces risk, and increases reliability over fully custom designs. We are skilled at the integration of custom imaging and laser systems to existing telescopes and optics. We can design your custom system from scratch or perform an independent assessment of your design.



DYNAMICAL MODELING AND SIMULATION

One major risk reduction for system design is to have a fully dynamical model to simulate the performance of the system with different design choices. With a dynamical analysis capability, the effect of design decisions on pointing and tracking; optical turbulence mitigation; alignment and calibration; and data rates, can be understood. Let us help you take your design to the next level with a custom dynamical model.

ABOUT X-LUMIN

X-lumin is on a quest to build an effective and efficient bridge between existing optical communications technology and the need for a high-speed data highway to meet exploding IoT demands. Our innovative and cutting-edge solutions incorporate state-of-the-art optical and photonic components which comes from over 25 years of experience in the design, development and integration of optical technologies and solutions, laser systems, tracking and surveillance, atmospheric propagation, and video and image processing. While the early foundations of our products and solutions focused on universities and government agencies, our solutions today allow us to bring these leading-edge solutions to the commercial marketplace which create new standards and solutions that have broader impact.

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